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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,809	12/08/2005	Makoto Saito	Q91566	7347

23373	7590	10/19/2007
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EXAMINER	
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ART UNIT	PAPER NUMBER
1621	

MAIL DATE	DELIVERY MODE
10/19/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/559,809	<b>Applicant(s)</b> SAITO ET AL.	
	<b>Examiner</b> Sikarl A. Witherspoon	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/8/05, 6/14/07</u> . | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drewes et al (US 5,344,992) and Gordon et al (Materials Research Society Proceedings, 1998).

The instant claims are drawn to a process for preparing a beta-diketone by reacting an ester compound with a ketone in the presence of an alkali metal alkoxide catalyst. Further limitations include the process being conducted using as solvent the ester reactant, an amide, or a urea compound; the process being one for producing 2,6-dimethyl-3,5-heptanedione from the reaction of an alkyl isobutyrate with 3-methylbutanone; and neutralizing the reaction solution with an acid followed by the addition of water to separate the solution into two layers to separate the product.

Drewes et al teach a process for preparing diketones by carrying out a Claisen condensation of a ketone and an ester, in the presence of a base, i.e., a hydride or alcoholate of an alkali metal or alkaline earth metal, in a mixture of dimethyl sulfoxide and at least one organic solvent (abstract). Preferred basic catalysts include sodium methoxide, ethoxide, and tert-butoxide; N-methylpyrrolidone is one of the preferred organic solvents. The reaction mixture is worked up by isolating the basic catalyst from

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the solution, washing the salt, adding a dilute acid such as hydrochloric acid or sulfuric acid, and obtaining the purified diketone therefrom (col. 3, line 45 to col. 4, line 65).

The differences between Drewes et al and the present invention are that Drewes et al teach the presence of dimethyl sulfoxide in the mixture with the organic solvent; Drewes et al do not teach the specific preparation of 2,6-dimethyl-3,5-heptanedione from 3-methylbutanone and an alkyl isobutyrate, and do not teach the specific ratio of basic catalyst to reactant(s) as recited in the instant claims. Also, Drewes et al do not teach a further step of reacting the diketone product with a metal salt to produce a metal complex of the diketone for use in a chemical vapor deposition process.

The instant claims are found obvious in view of Drewes et al because first, the instant claims are drawn a process "comprising" the recited reaction steps and reagents. Therefore, additional reagents, such as the dimethyl sulfoxide present in the solvent mixture taught in Drewes et al, are not precluded from the instant process. It would have been obvious to a person of ordinary skill in the art to employ, or not employ various solvent mixtures so as to produce reaction conditions that would allow for optimal conversion in the condensation reaction.

The fact that Drewes et al do not specifically teach the preparation of 2,6-dimethyl-3,5-heptanedione from 3-methylbutanone and an alkyl isobutyrate is of no patentable import. The independent claim of the instant invention recites generic structures for the reactant ketone and ester, and for the diketone formed. The same is true in Drewes et al; the diketone product, and ketone and ester reactants also have a generic structure, i.e., formulae (I) to (III) respectively. The generic structures taught by

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Drewes et al are of similar scope to the generic structures recited in the instant claims. Therefore, one of ordinary skill in the art could look to the Drewes et al patent for a method of preparing 2,6-dimethyl-3,5-heptanedione from 3-methylbutanone and an alkyl isobutyrate.

The specific amount of reactants, or ratio of catalyst to reactants claimed herein is also found obvious, absent a showing of unexpected results, because a person of ordinary skill in the art would readily experiment with such ratios in order to find the most desirable ratios that would afford optimal results, i.e., conversion, of reactants, selectivity and yield of the diketone, etc.

Gordon et al teach a process wherein a diketone, such as 2,6-dimethyl-3,5-heptanedione, is reacted with a metal salt in ethanol as solvent, to produce the corresponding metal complex (p 65 to 66).

It would have been obvious to a person having ordinary skill in the art to combine Gordon et al with Drewes et al in order to obtain guidance on making metal complexes of the diketones made by Drewes et al, said complexes being useful starting materials for chemical vapor deposition for preparing a wide variety of products.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

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F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-27 of U.S. Patent No. 7,084,306.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the main difference is that the instant claims contain dependent claims for preparing a different compound than that which is prepared in the dependent claims of the patent. This is not a patentable distinction because the independent claim in both the instant invention and the patent recite generic reactants and a generic structure for the product; the reactants and product therefore overlap.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikarl A. Witherspoon whose telephone number is 571-272-0649. The examiner can normally be reached on M-F 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SIKARL A. WITHERSPOON  
PRIMARY EXAMINER